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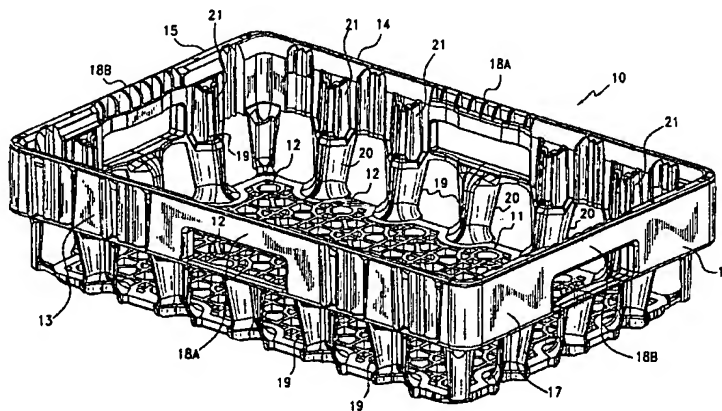
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(54) Title: **ERGONOMIC FOUR HANDLE BEVERAGE CASE WITH STRENGTHENED SIDE WALL**



(57) Abstract: A half-depth molded plastic beverage case (10) has a bottom wall (11) with a plurality of uniformly distributed beverage container seating areas (12). Upstanding side walls (13, 14) and upstanding end walls (15, 16) extend upwardly from opposite sides and ends, respectively, of the bottom wall. The side and end walls are divided into upper and lower wall portions (A and B) of approximately equal height, and a handle (18A, 1813) is formed in the upper portion of each of the side walls and end walls. The lower wall portion of one case is nestable fully into the upper wall portion of another case, whereby two of the cases nested together have a combined height equal to the height of a single case. The upper wall portion is of single wall construction, and is convoluted in areas (23) adjacent the seating areas (12) to define a plurality of vertical ribs (24) to reinforce the upper wall portion and define supports for spaced line contact with a container in the case. Hollow reinforcing buttresses (21) extend upwardly along an inner surface of the upper wall portion and are convoluted to form a plurality of vertically extending ribs (22).

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## **Ergonomic Four Handle Beverage Case With Strengthened Side Wall**

This application claims the benefit of prior US Provisional Patent Application Serial Nos. 60/356,920, filed February 14, 2002, and 60/391,338, filed June 25, 2002.

### **Technical Field:**

This invention relates to beverage cases. More specifically, the invention relates to a half-depth or mid-depth molded plastic beverage case having handles on all four sides, a strengthened side wall that uses a minimum amount of material, and that is nestable with like beverage cases and to a certain extent nestable with prior art non-nestable "box-type" beverage cases.

### **Background Art:**

Beverages, e.g., beer and soft drinks, are commonly packaged in cans or bottles. These cans and bottles, especially in sizes from about sixteen to twenty ounces, and up to about twenty-four ounces, are frequently bundled and packaged in groups, e.g., six-pack cartons, for marketing to consumers. To facilitate handling, whether bundled together in pre-packaged groups or left loose, the cans and bottles are commonly placed in cases holding up to twenty-four containers, depending upon the size of the containers.

Reusable molded plastic cases capable of holding twenty-four containers of beverage have been developed in the prior art. These cases have a bottom wall or floor and upstanding side and end walls around the periphery of the floor. One type of prior art case is of approximate mid-depth construction, i.e., has a height that is about one half the height of beverage containers placed therein, and has a side wall of substantially uniform height that is about 4 ½ inches high, and is commonly referred to in the industry as a "box-style" case. These box-style cases do not nest with each other or with other cases or boxes. They do,

half again as high as the height of a single case. Thus, the new nestable cases can be nested and stacked together, or mixed with conventional non-nestable box-style cases to produce stacks of cases that have uniform height, thereby facilitating handling of the cases, especially when they are palletized for shipment or storage.

Further, applicant is not aware of any mid-depth box-style case having handles in an upper portion of both the side and end walls, and especially which further includes a wall of single thickness supported in spaced relation to the floor of the case, with the wall convoluted adjacent the bottle seating areas to define a plurality of vertically extending ribs oriented in an arc to form a plurality of spaced lines of contact for engaging and supporting the bottles and also for strengthening the single thickness wall, whereby a strong wall is obtained with a minimum amount of material.

#### **Disclosure of the Invention:**

The present invention is a mid-depth box-style case that has a handle in an upper portion of each of the four sides, and is nestable with like cases and nestable within as well as stackable with conventional non-nestable box-style cases, and which has a side wall height and structure such that when two of the nestable cases are nested together, or one of the cases of the invention is nested within a conventional box-style case, they have a combined height that is half again as great as the height of a single case. Further, the nestable mid-depth case of the invention has a wall of single thickness supported in spaced relation to the floor of the case, with handles in both the side and end walls, and the wall is convoluted adjacent the bottle seating areas to define a plurality of vertically extending ribs that form spaced lines of contact oriented in an arc for engaging and supporting beverage containers and also for strengthening the single thickness wall, whereby a strong wall is obtained with a minimum amount of material.

More specifically, the case of the invention is intended for handling containers of beverage of 16 to 24 ounce size, although it could be adapted for use with containers of different size, and the floor is divided into 24 container seating areas. The case comprises a side wall divided into upper and lower wall portions of approximately equal height, wherein the lower wall portion is inset relative to the upper wall portion, and the upper wall portion

effectively forms a band that extends continuously around the perimeter of the box. A handle is formed in the upper wall portion on each side and end of the box. The four handles facilitate handling by plant and truck personnel, especially when sliding loaded cases off the top of a stack.

The lower wall portion comprises a series of spaced columns extending between the floor of the box and the upper wall portion. The columns have curved concave surfaces facing toward adjacent beverage container seating areas, and provide support to bottles resting on the seating areas.

Hollow buttresses extend upwardly from the upper ends of the columns and across substantially the height of the upper wall portion. The buttresses serve to reinforce the single-thickness upper wall portion in these areas, and in the preferred embodiment are convoluted to form vertically extending ribs that make line contact with the beverage containers and also strengthen the buttresses.

Further, in the preferred embodiment the upper wall portion in the areas between the buttresses is convoluted to define a plurality of vertically extending ribs arranged so that they form lines of contact lying on a radius of curvature having its center spaced inwardly of the wall. The convoluted sections reinforce the single-thickness upper wall portion, and the ribs provide multiple points of line contact with a bottle resting on the adjacent seating area.

The provision of a handle in an upper wall portion of each of the four sides gives the case versatility and ease of handling not found in conventional mid-depth cases. Moreover, the case of the invention has a side wall height and structure such that it is nestable up to one half its height with like cases, or up to one half its height into a conventional box-style case, and when two cases are nested with one another they have a combined height that is one half again as great as the height of a single case. This relationship produces uniformity in the stacked heights of conventional non-nestable box-style cases and nestable cases of the invention, facilitating handling, storage and shipment of mixed conventional boxes and mid-depth cases embodying the present invention. Further, the case of the invention is stackable with conventional box-style cases. A conventional box-style case nests a short distance, e.g., three-eighths of an inch, into the case of the invention, lending stability and uniformity to a stack containing conventional boxes and mid-depth cases of the invention.

**Brief Description of the Drawings:**

The foregoing, as well as other objects and advantages of the invention, will become apparent from the following detailed description of the invention taken in conjunction with the accompanying drawings, wherein like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a top perspective view of a preferred embodiment of case according to the invention.

Figure 2 is a bottom perspective view of the case of figure 1.

Figure 3 is an end view in elevation of the case of figure 1.

Figure 4 is a side view in elevation of the case of figure 1.

Figure 5 is a top plan view of the case of figure 1.

Figure 6 is a bottom plan view of the case of figure 1.

Figure 7 is a transverse sectional view of the beverage case of the invention, taken along line 7-7 in figure 5.

Figure 8 is a longitudinal sectional view taken along line 8-8 in figure 5.

Figure 9 is an enlarged fragmentary sectional view taken along line 9-9 in figure 5.

Figure 10 is an enlarged fragmentary sectional view taken along line 10-10 in figure 5.

Figure 11 is a horizontal sectional view taken along line 11-11 in figure 4.

Figure 12 is an end view in elevation of two of the cases of the invention in nested relationship.

Figure 13 is an enlarged fragmentary transverse sectional view of two of the cases of the invention shown nested together.

Figure 14 is a side view in elevation of one of the cases of the invention nested into a conventional non-nestable box-style case.

**Best Mode for Carrying Our the Invention:**

The nestable mid- or half-depth beverage case of the invention is indicated generally at 10 in figures 1-8. The case comprises a bottom wall 11 of open grid design defining a plurality of uniformly spaced beverage container seating areas 12. Opposed upstanding side walls 13 and 14, and opposed upstanding end walls 15 and 16 extend around the periphery of the

bottom. The side and end walls are each divided into upper and lower wall portions **A** and **B** of approximately equal height, wherein the lower wall portion **B** is inset relative to the upper wall portion **A**, and the upper wall portion effectively forms a band **17** that extends continuously around the perimeter of the box. Handles **18A** are formed in each of the side walls, and handles **18B** are formed in each of the end walls, in the upper wall portion or band **17**. The four handles in the upper wall portion facilitate handling by plant and truck personnel, especially when sliding loaded cases off the top of a stack.

The lower wall portion **B** comprises a series of spaced columns **19** extending between the floor of the box and the upper wall portion or band **17**. The columns have curved concave surfaces **20** facing toward adjacent beverage container seating areas **12**, and provide support to bottles (not shown) resting on the seating areas.

Hollow buttresses **21** extend upwardly from the upper ends of the columns and along the inner surface of the upper wall portion **17**. The buttresses serve to reinforce the single-thickness upper wall portion in these areas, and in the preferred embodiment are convoluted to form vertically extending ribs **22** that both reinforce the buttresses and make line contact with the beverage containers.

Further, in the preferred embodiment the single thickness upper wall portion **17** in the areas **23** between the buttresses is also convoluted to define a plurality of vertically extending ribs **24** arranged so that they form lines of contact lying on a radius of curvature **R** having its center spaced inwardly of the wall. The convoluted sections **23** reinforce the single-thickness upper wall portion **17**, and the ribs **24** provide multiple points of line contact with a bottle (not shown) resting on an adjacent seating area **12**.

Horizontal, outwardly projecting flanges **25** and **26** are formed on the upper and lower edges of the wall **17**, further reinforcing the single thickness wall and defining finished upper and lower edges. The flanges **26** on the bottom edge of the wall also serve as a rest or stop against which the upper edge of a subjacent case engages when two of the cases are nested together as shown in figures 12 and 14. With reference to figures 2 and 6 it will be seen that the lower flanges **26** are interrupted or omitted in the areas where the handles **18** and

buttresses **21** are located, avoiding any trapped or closed spaces behind the buttresses or within the handles and facilitating drainage from these spaces.

Further, and with particular reference to figures 1-5 and 7-10, it will be seen that the handles are all essentially identically constructed, except that the handles **18A** on the side walls are of less thickness or width in a direction transverse to the length of the wall than the handles **18B** on the end walls. The handles all comprise inner and outer wall panels **27** and **28**, respectively, with interconnecting transverse ribs **29** extending between them. The upper edge of the handles is open, and the lower edge is closed by a bottom wall **30** extending between the lower edges of the inner and outer wall panels. The bottom wall **30** is perforated at **31** between each pair of ribs **29** to facilitate drainage of moisture from the space between the wall panels.

The case of the invention has a height  $h_1$  that is approximately the same as the height  $h_2$  of a conventional non-nestable box-style case, whereby when two of the cases of the invention are nested together, they have a combined height that is half again as great as the height of a single conventional case. See figure 12.

Moreover, the case of the invention is nestable one half its depth into a conventional box-style case, as shown in figure 14. Further, the bottom of a conventional non-nestable box-style case inserts a short distance into the top of a nestable case of the invention to the same extent that two non-nestable cases engage one another, to provide a stable stacked relationship (not shown).

The provision of four handles gives the case versatility and ease of handling not found in conventional mid-depth cases. Moreover, the nestability of the case of the invention with like cases, and to some extent with conventional box-style cases, and the stackability with conventional box-style cases, lends stability and uniformity to a stack containing conventional boxes and mid-depth cases of the invention. Additionally, when two cases of the invention are nested together, their combined nested height is equal to the height of a single conventional box. This relationship facilitates handling, storage and shipment of mixed conventional box-style cases and mid-depth cases of the invention.

Although particular embodiments of the invention are illustrated and described in detail herein, it is to be understood that various changes and modifications may be made to the invention without departing from the spirit and intent of the invention as defined by the scope of the appended claims.

WHAT IS CLAIMED IS:



## C L A I M S

1. A beverage case, comprising:  
a bottom wall (11) having a plurality of uniformly distributed beverage container seating areas (12) and a perimeter; and  
upstanding side and end walls (13-16) extending upwardly from the perimeter of the bottom wall, said side and end walls each divided into an upper wall portion (A) and a lower wall portion (B) of approximately equal height, wherein the lower wall portion (B) of one case is fully nestable into the upper wall portion (A) of another case so that the combined nested height of the two cases is equal to the height of a single case.
2. A beverage case as claimed in claim 1, wherein:  
handles (18A) are formed in each of the side walls (13, 14), and handles (18B) are formed in each of the end walls (15, 16) to facilitate handling of the case.
3. A beverage case as claimed in claim 2, wherein:  
the lower wall portion (B) is inset relative to the upper wall portion (A), and the upper wall portion effectively forms a band (17) that extends continuously around the side and end walls.
4. A beverage case as claimed in claim 3, wherein:  
the upper wall portion (A) is of single wall construction and is convoluted in areas (23) adjacent the seating areas (12) to form a plurality of vertically extending ribs (24), said ribs reinforcing the single wall construction and defining spaced areas of line contact with a beverage container seated on the adjacent seating area.
5. A beverage case as claimed in claim 4, wherein:  
the lower wall portion (B) comprises a plurality of spaced apart columns (19) extending upwardly from the floor and supporting the band (17) of the upper wall portion (A); and

hollow buttresses (21) extend upwardly from upper ends of the columns and along an inner surface of the band (17), said buttresses reinforcing the band (17) in areas between the convoluted areas (23).

6. A beverage container as claimed in claim 5, wherein:

the buttresses are convoluted to form a plurality of vertically extending ribs (22) which reinforce the buttresses and define spaced areas of line contact with a beverage container seated on the adjacent seating area.

7. A beverage container as claimed in claim 6, wherein:

outwardly projecting horizontal flanges (25, 26) are formed on upper and lower edges of the band (17) to reinforce the band, provide stops for nested engagement of two cases, and define finished edges on the band.

8. A beverage container as claimed in claim 1, wherein:

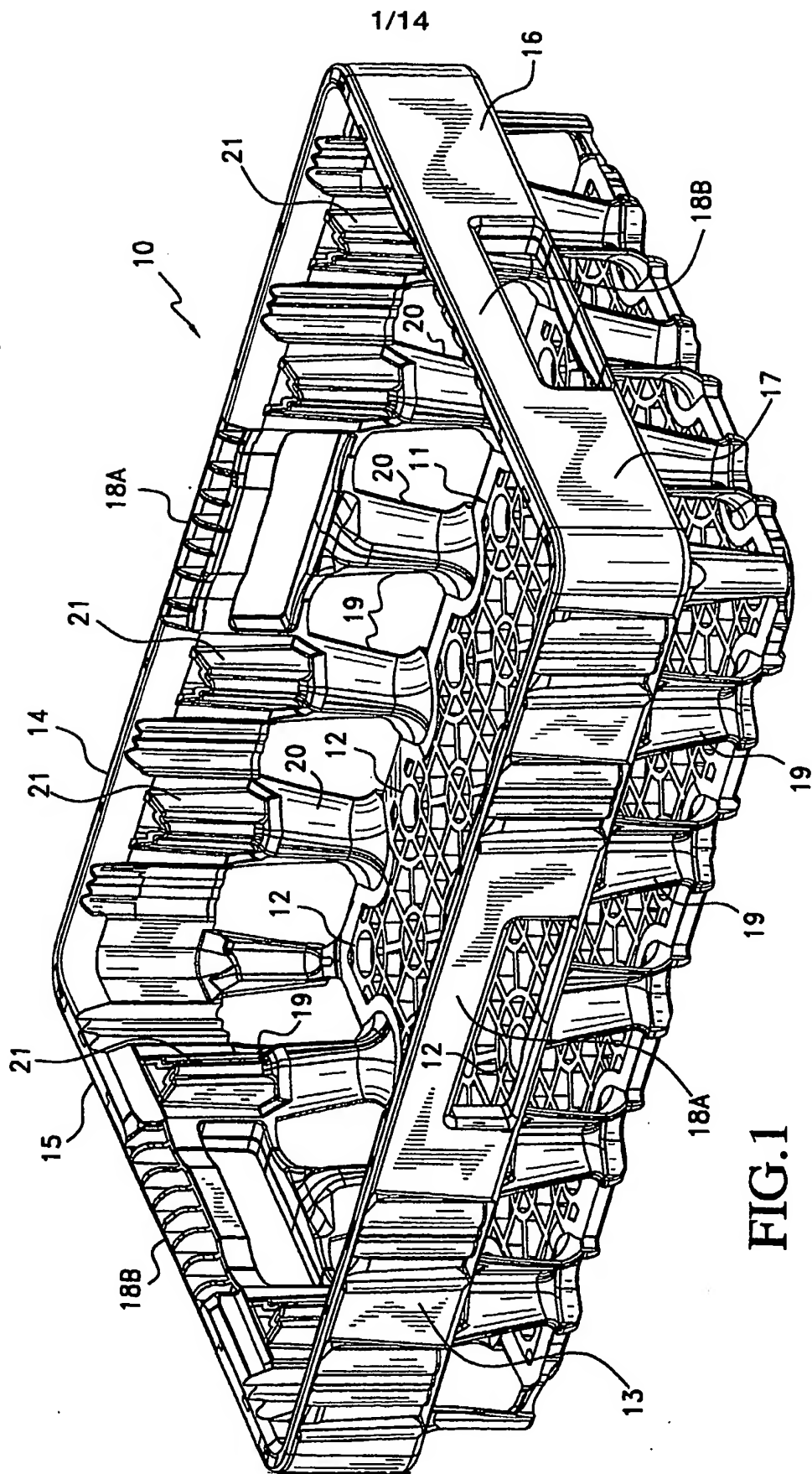
the upper wall portion (A) is of single wall construction and is convoluted in areas (23) adjacent the seating areas (12) to form a plurality of vertically extending ribs (24), said ribs reinforcing the single wall construction and defining spaced areas of line contact with a beverage container seated on the adjacent seating area.

9. A beverage container as claimed in claim 1, wherein:

the upper wall portion (A) comprises a continuous band (17) extending around the side and end walls of the case, said band being of single wall construction;

the lower wall portion (B) comprises a plurality of spaced apart columns (19) extending upwardly from the floor and supporting the upper wall portion (A); and

hollow buttresses (21) extend upwardly from upper ends of the columns and along an inner surface of the upper wall portion, said buttresses reinforcing the upper wall portion in areas between the convoluted areas (23).



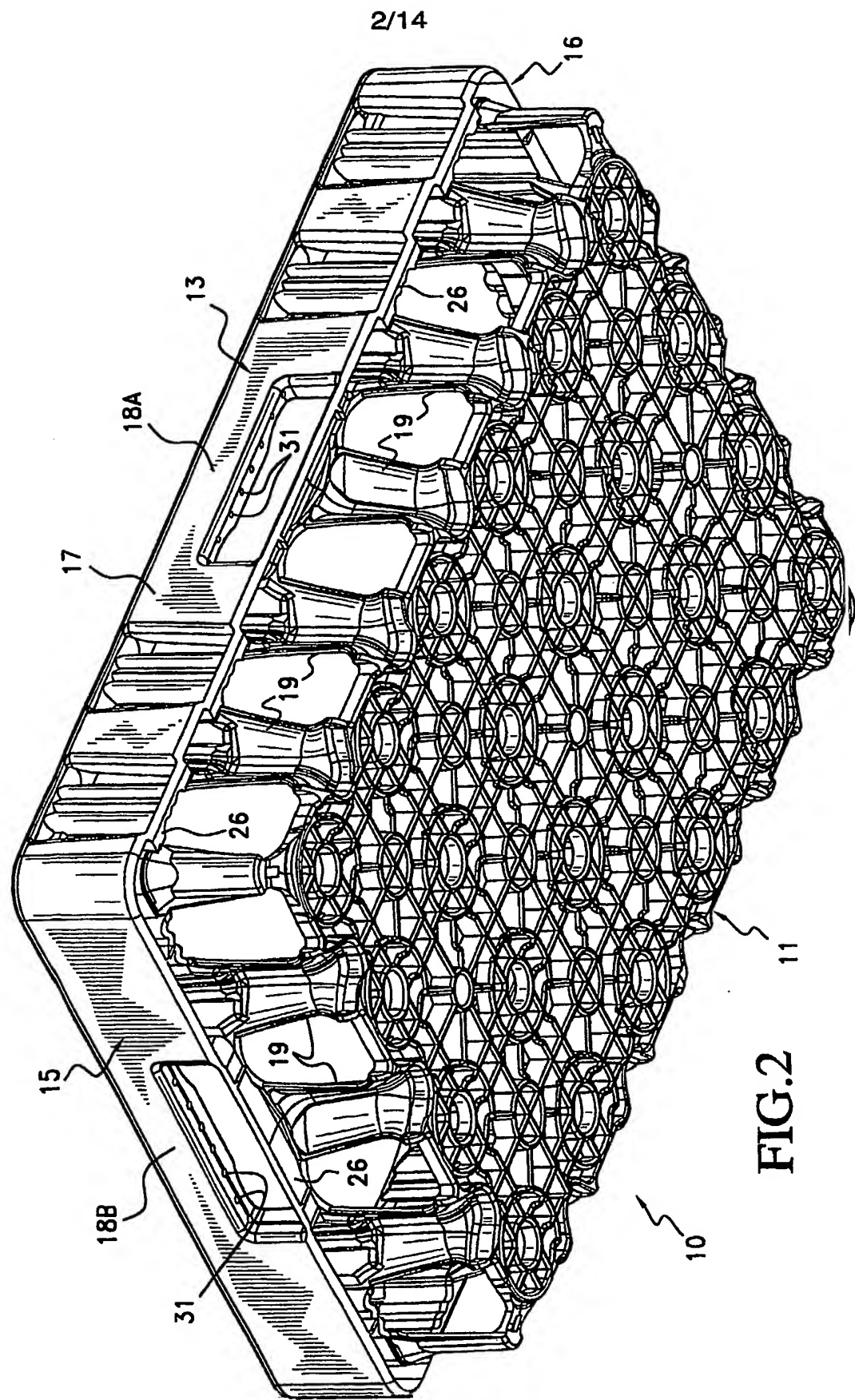
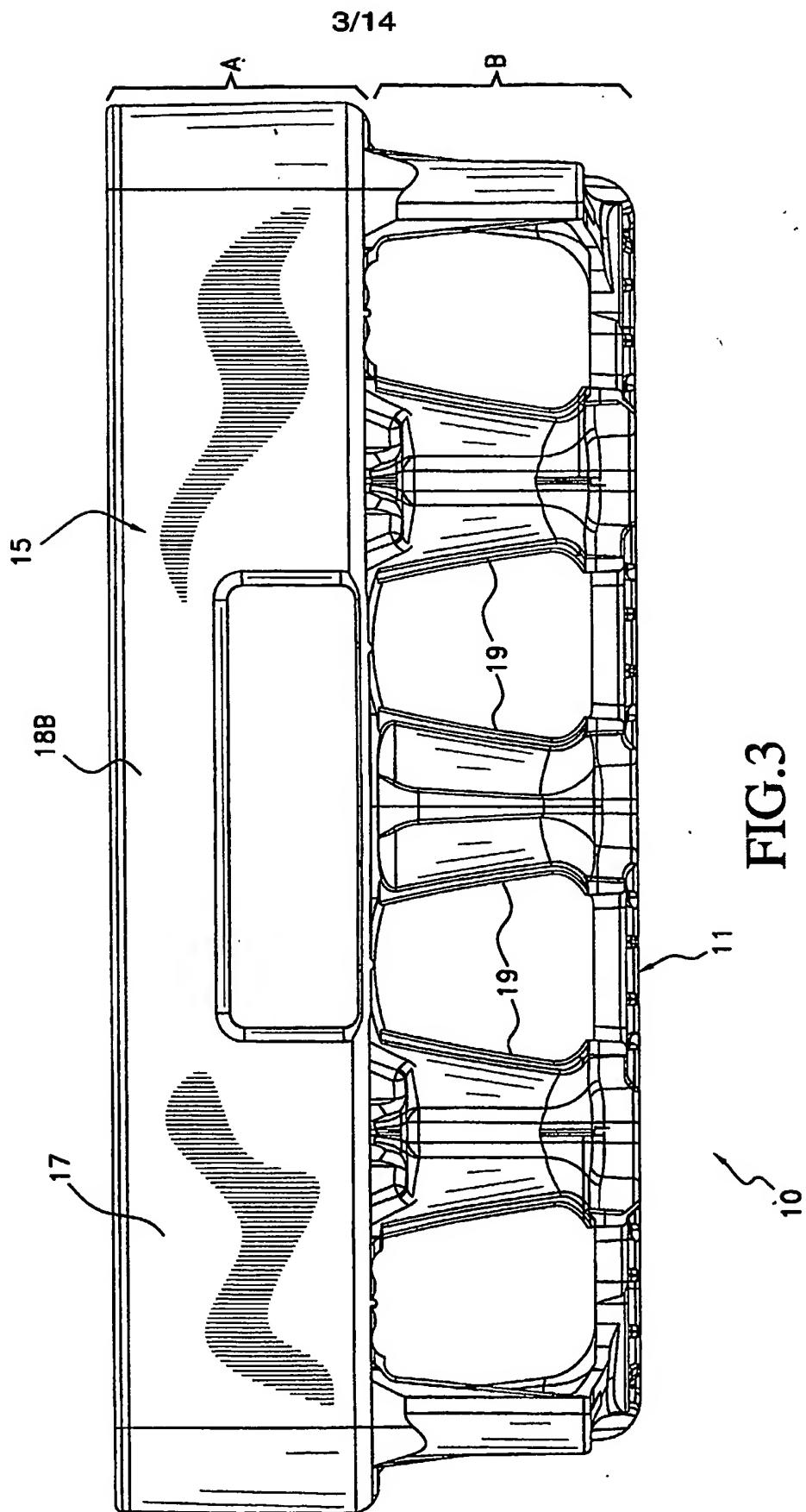
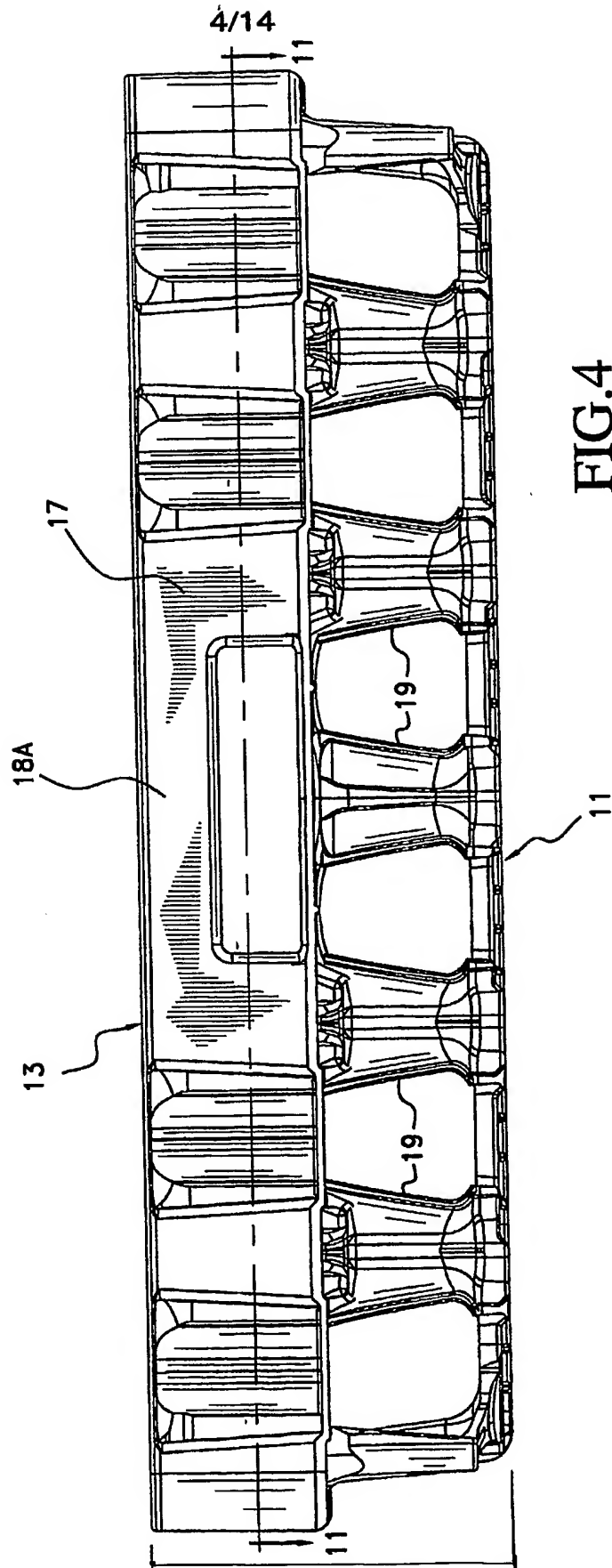


FIG.2





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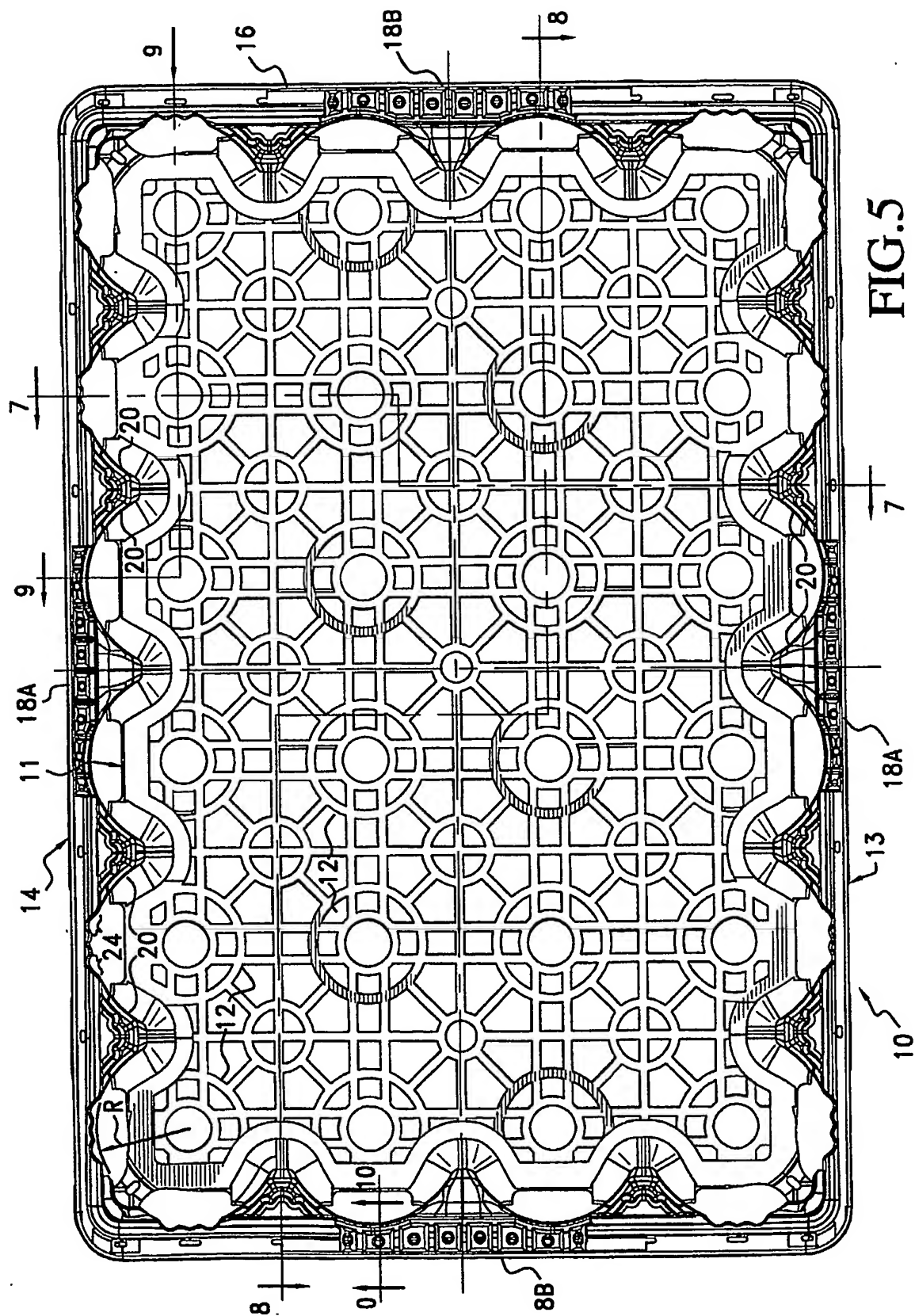
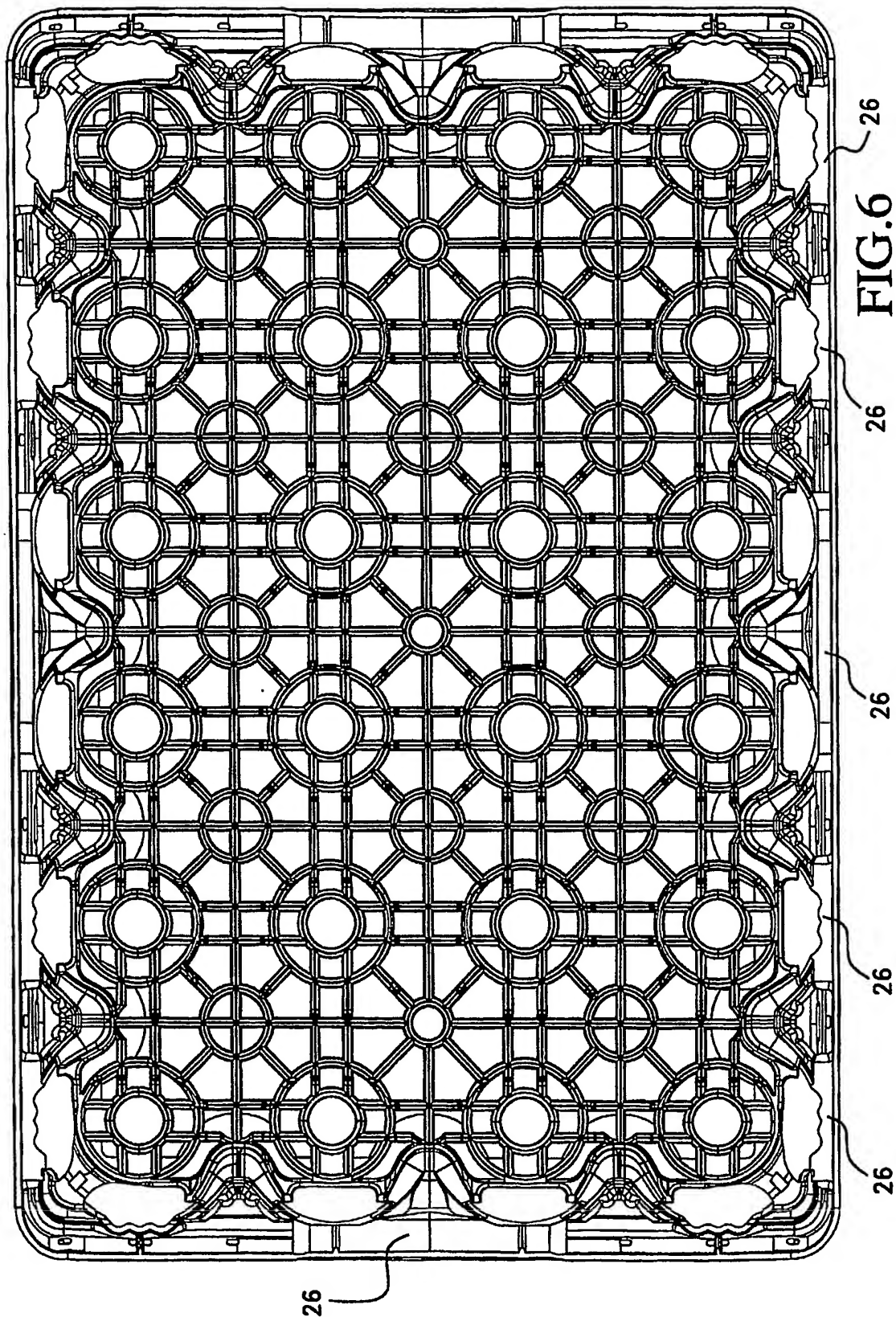


FIG.5

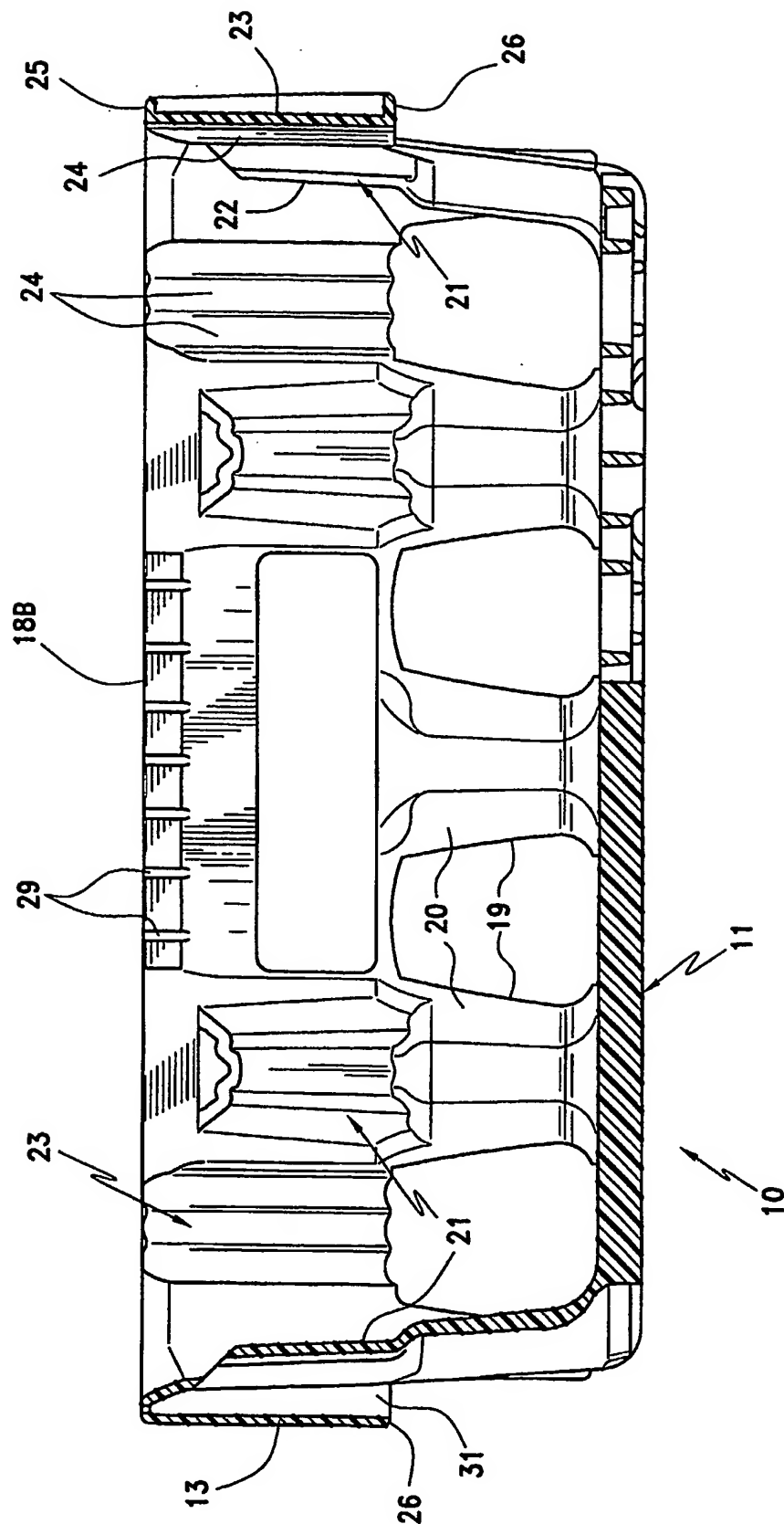


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FIG. 7



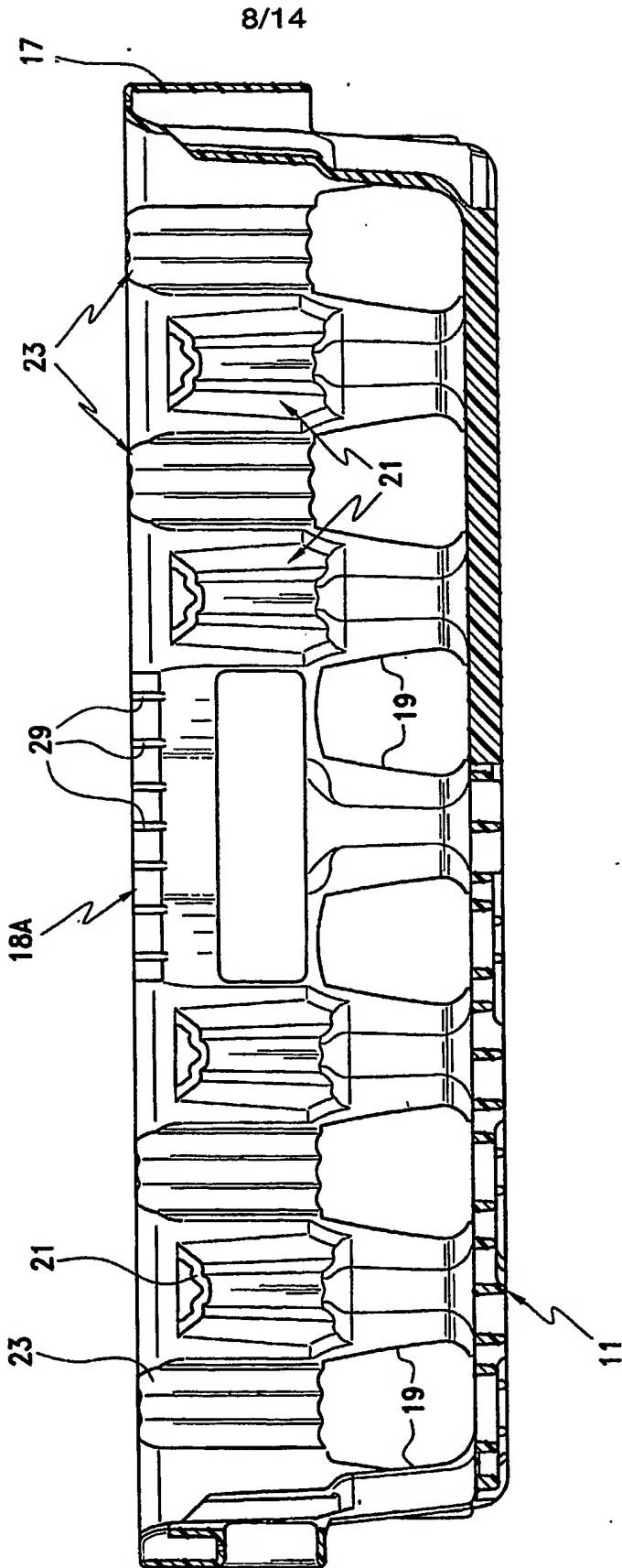
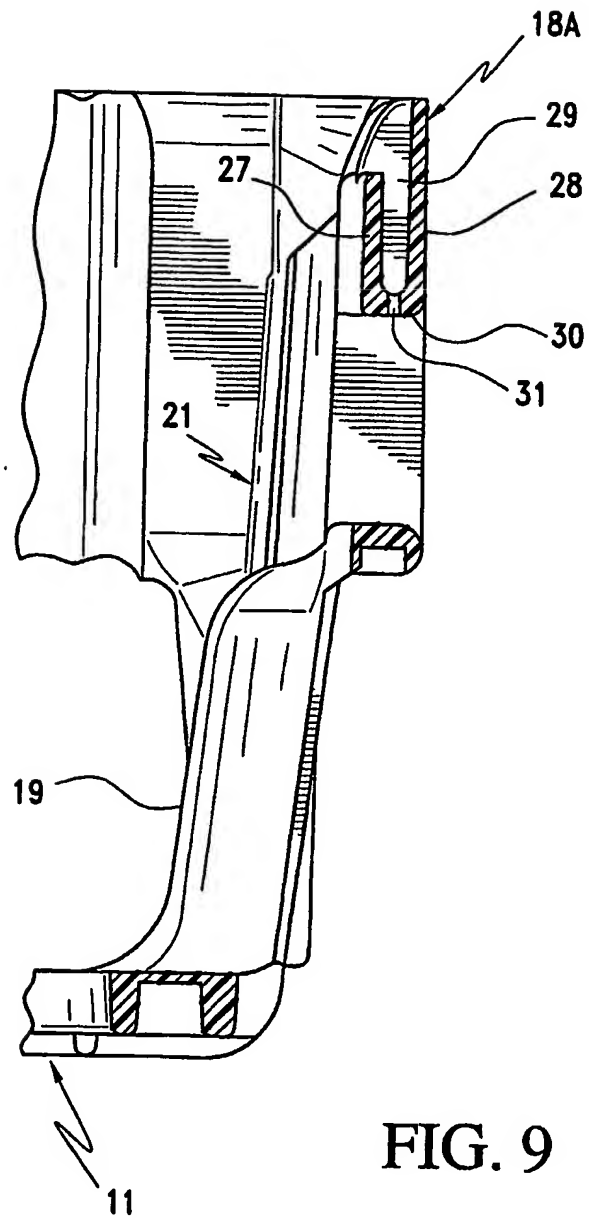


FIG. 8

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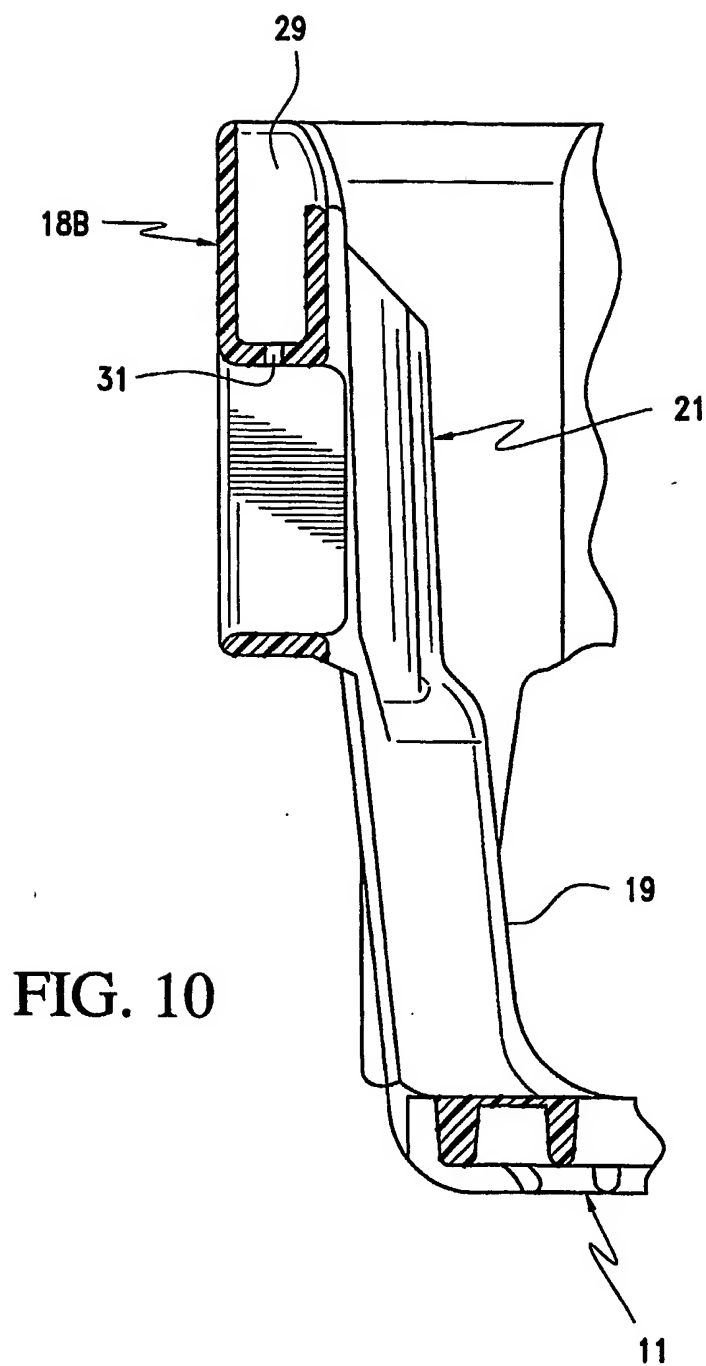
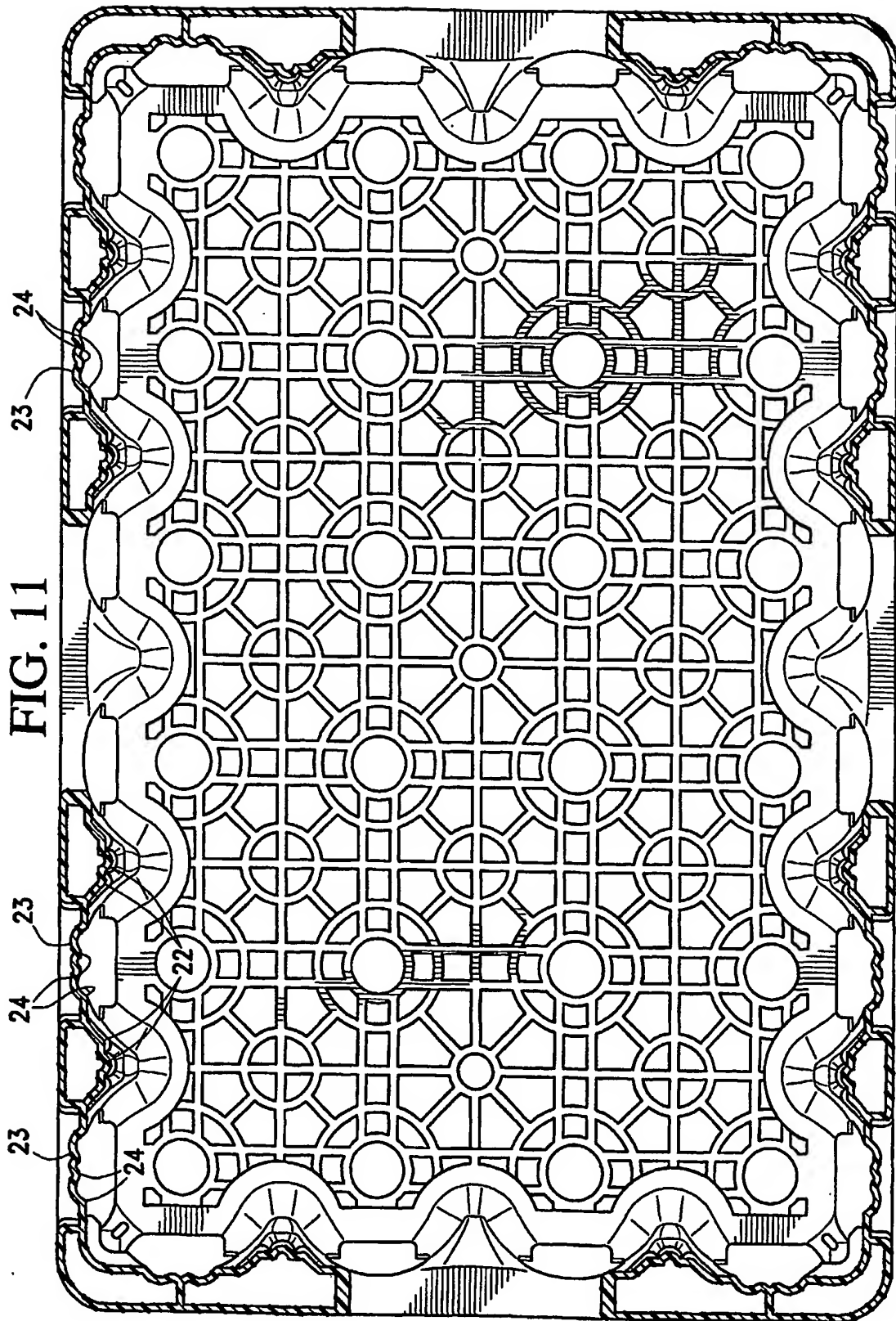


FIG. 10



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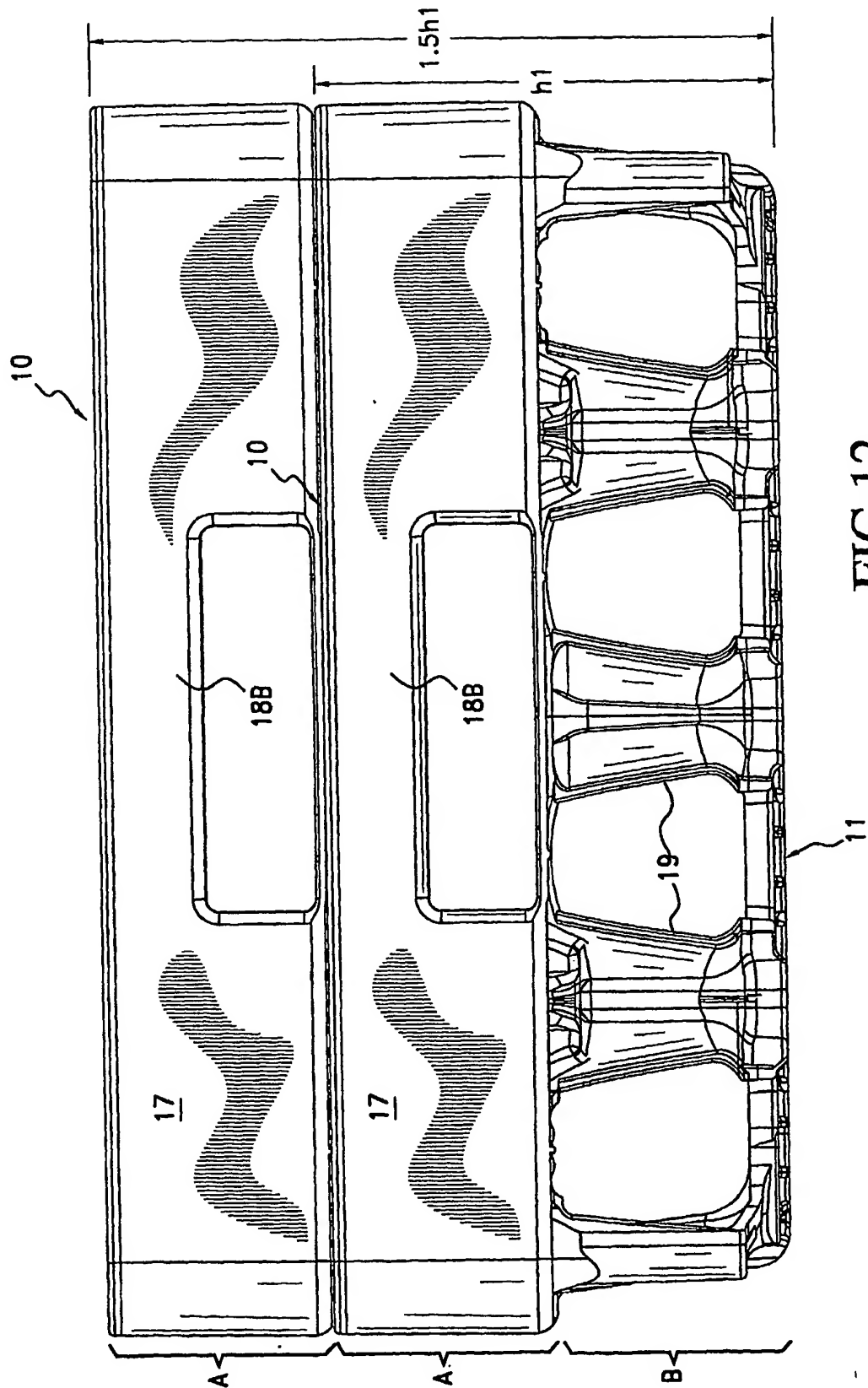


FIG.12

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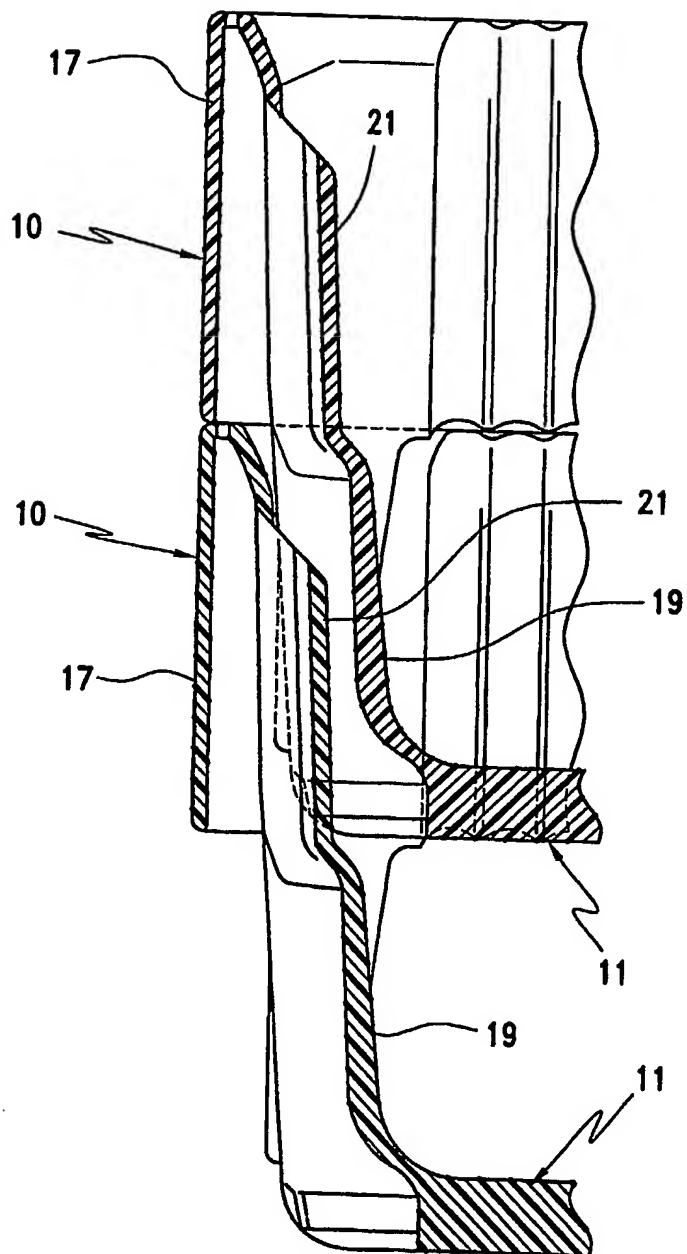


FIG. 13

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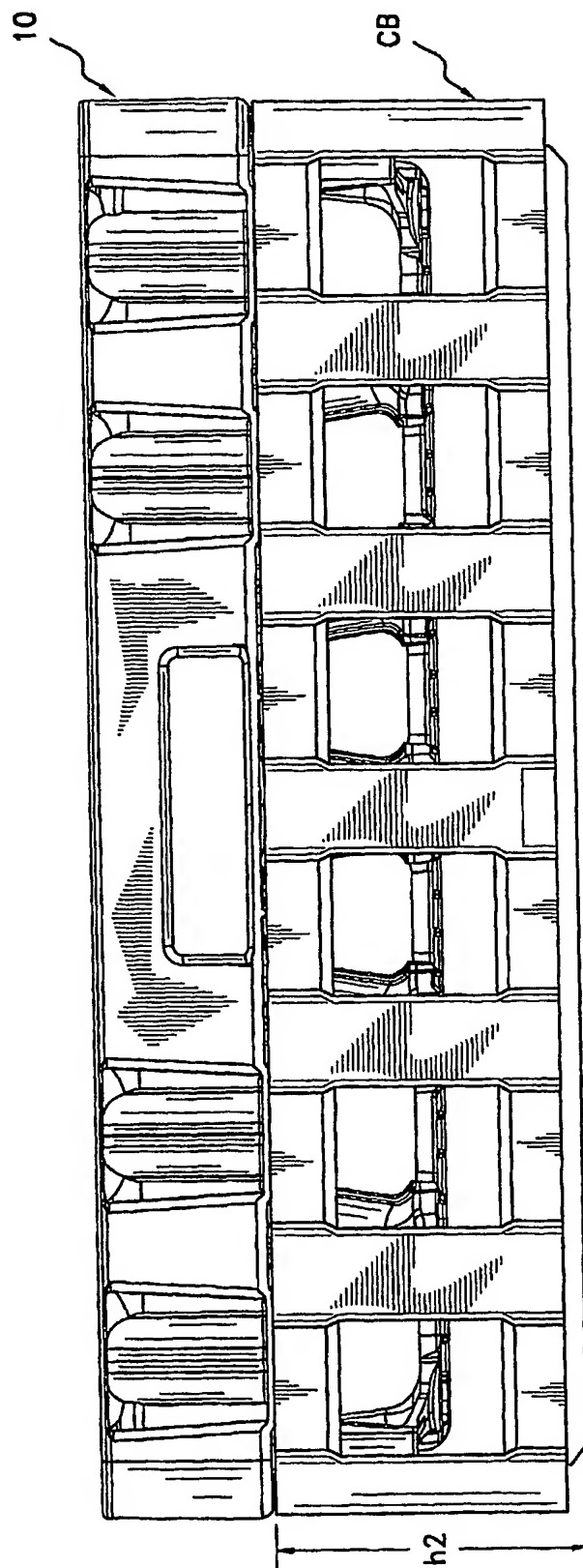


FIG.14